

PATENT

Application No.: 09/484,799

Filing Date: January 18, 2000

Applicant: Barker, et. al

Group Art Unit: 1745

Examiner: C. Chaney

Title: LITHIUM BASED ACTIVE MATERIAL AND PREPARATION THEREOF

Attorney Docket: 4858-000123

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicant hereby submits an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS, AND OTHER INFORMATION

The patents, publications and other information submitted for consideration by the Office (except unpublished U.S. patent applications) are listed on Form 1449 attached hereto.

II. COPIES

A. ☒ Submitted herewith is a legible copy of (i) each U.S. patent application publication and U.S. and foreign patent; (ii) each publication or that portion which caused it to be listed; (iii) for each cited pending U.S. application, the application specification including the claims, and any drawing of the application which caused it to be listed including the claims directed to that portion; and (iv) all other information or that portion which caused it to be listed.

B. ☐ Any patents, publications or other information which are listed on Form 1449 or on the copies of PTO-892, but which are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

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C. This is a PCT application in the entry of the National Phase in the United States. A copy of the International Search Report is attached for the Examiner's information. The documents listed on the International Search Report are listed on the attached Form-1449 for consideration by the Examiner and for listing on any patent resulting from this application. Since the International Search Report was from the US, EPO, or JPO search authorities, copies of these references should have been supplied to the USPTO under the trilateral agreement and are believed to be in the file of the above-identified application. (MPEP 1893.03(g))

III. CONCISE EXPLANATION OF THE RELEVANCE (check at least one box)

A. X Except as may be indicated below in (B), all of the patents, publications or other information are in the English language (concise explanation not required).

B. X A concise explanation of the relevance of each patent, publication or other information listed that is not in the English language is as follows (see 37 C.F.R. § 1.98(a)(3)):

1. See the attached foreign search report.
2. X English translations are provided for: WO 200060680, JP 09134725, JP 09171827, JP 2000294238, JP 9134724, JP 2001085010, JP 08171938.
3. X Other: English Abstracts Provided For: JP 2001110414, JP 2001110455, JP 5325961, JP 2001052733, JP 11025983, DE 4024409 A1, JP 5299101, WO 200060680, JP 11111295, WO 9512900, and EP 1 049 182, WO 9512900.

C. The following additional information is provided for the Examiner's consideration.

IV. CROSS REFERENCE TO RELATED APPLICATION(S)

A. The Examiner is advised that the following co-pending application(s) contain(s) subject matter that may be related to the present application. By bringing this(these) application(s) to the Examiner's attention, Applicant(s) does(do) not waive the confidentiality provisions of 35 U.S.C. § 122.

Serial No.

Filing Date

Art Unit

V. THIS IDS IS BEING FILED UNDER

A. 37 C.F.R. § 1.97(b): (check only one box)

1. within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d) (37 C.F.R. § 1.97(b)(1)). No fee or certification is required.

2. ____ within three months of the date of entry of the national stage as set forth in §1.491 in an international application (37 C.F.R. § 1.97(b)(2)). No fee or certification is required.

3. ☒ before the mailing of a first Office Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or certification is required. In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the certification under 37 C.F.R. § 1.97(e) below; or, if no certification has been made, charge our deposit account a fee in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).

4. ____ before the mailing of a first Office Action after the filing of a request for continued examination under 37 C.F.R. § 1.114. No fee or certification is required.

B. ____ 37 C.F.R. § 1.97(c): (check only one box)

- before the mailing date of either any Final Office Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution.

1. ____ No certification; therefore, a fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).

2. ____ See the certification below. No fee is required.

C. ____ 37 C.F.R. § 1.97(d):

- after the mailing date of either a Final Office Action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311, yet on or before payment of the issue fee.

1. ____ See the certification below. A fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).

VI. CERTIFICATION UNDER 37 C.F.R. § 1.97(e): (check only one box)

The undersigned hereby certifies that:

A. ____ each item of information contained in this IDS was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS (See 37 C.F.R. § 1.97(e)(1)); or

B. ____ no item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this IDS (See 37 C.F.R. § 1.97(e)(2)).

C. ____ Some of the items of information were first cited in a communication from a foreign patent office. As to this information, the undersigned hereby certifies that each item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby certifies that no item of this remaining information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this IDS.

VII. PAYMENT OF FEES (check only one box)

A. ____ A check in the amount of \$180.00 is enclosed for the above-identified fee.

B. ____ Please charge Deposit Account No. 22-0100 in the amount of \$180.00 for the above-indicated fee. A duplicate copy of this paper is attached.

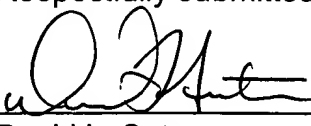
The above references are being cited only in the interest of candor and without any admission that they constitute statutory prior art, contain matter which anticipates the invention, or which would render the same obvious, either singly or in combination, to a person of ordinary skill in the art. Furthermore, this Information Disclosure Statement shall not be construed as a representation that a search has been made.

If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. 22-0100.

Please charge any additional fees or credit any overpayment pursuant to 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. 22-0100.

Respectfully submitted,

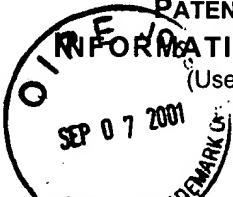
Dated: 7 September 2001

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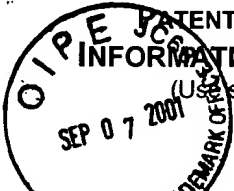
FORM HDP-1449 (Based on Form PTO-1449) <div style="display: flex; align-items: center; justify-content: center;">  <div> PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE CITATION (Use several sheets if necessary) </div> </div>		ATTORNEY DOCKET NO. 4858-000123	SERIAL NO. 09/474,799
Sheet 1 of 4		APPLICANT Barker, J.	
		FILING DATE 1/18/00	GROUP 1745

U.S. PATENT DOCUMENTS						
Ref. Desig.	Examiner's Initials	Document Number	Date	Name	Class/ Subclass	(If appropriate) Filing Date
1.		6,153,333	11/28/00	Barker	428/218.1	
2.		5,871,866	2/16/99	Barker, et al.	429/231.1	
3.		5,496,663	03/05/96	Walk, et al.	429/218	
4.		5,567,548	10/22/96	Walk, et al.	429/218	
5.		5,219,677	06/15/93	Labat, et al.	429/50	

FOREIGN PATENT DOCUMENTS								
Ref. Desig.	Examiner's Initials	Document Number	Date	Country	Class/ Subclass	Translation		
						Yes	No	
1.		✓ JP 2001110414	4-20-2001	JAPAN, ENGLISH ABSTRACT PROVIDED				X
2.		✓ JP 2001110455	4-20-2001	JAPAN, ENGLISH ABSTRACT PROVIDED				X
3.		✓ JP 5325961	12-10-1993	JAPAN, ENGLISH ABSTRACT PROVIDED				
4.		✓ JP 9134724	05-20-1997	JAPAN		X		
5.		✓ JP 2001052733	02-23-2001	JAPAN, ENGLISH ABSTRACT PROVIDED				X
6.		✓ JP11025983	01-29-1999	JAPAN, ENGLISH ABSTRACT PROVIDED				X
7.		✓ JP2001085010	03-30-2001	JAPAN		X		
8.		✓ CA 2096386	11-19-1993	CANADA				
9.		✓ EP 571858 B1	12-01-93	European Patent Office	H01M-4/58			
10.		✓ WO 200060680	10-12-00	Japan- English Abstract on Document	H01M-4/58			
11.		✓ WO 97/40541	10-30-97	WIPO	H01M-4-58	X		

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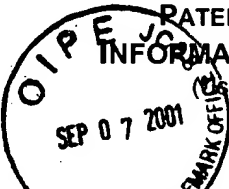
<p style="text-align: center;">FORM HDP-1449 (Based on Form PTO-1449)</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p style="text-align: center;">PATENT AND TRADEMARK OFFICE</p> <p style="text-align: center;">INFORMATION DISCLOSURE CITATION</p> <p style="text-align: center;">(Use several sheets if necessary)</p> <p style="text-align: center;">Sheet 2 of 4</p> </div> </div>	ATTORNEY DOCKET NO.	SERIAL No.
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12.		<input checked="" type="checkbox"/> JP 09134725	05-20-97	Japan	H01M-4-58	<input checked="" type="checkbox"/>		
13.		<input checked="" type="checkbox"/> JP 09171827	06-30-97	Japan	H01M-4/02	<input checked="" type="checkbox"/>		
14.		<input checked="" type="checkbox"/> JP 2000294238	10-20-00	Japan	H01M-4/02	<input checked="" type="checkbox"/>		
15.		<input checked="" type="checkbox"/> JP 08171938	07-02-96	Japan	H01M-10/40	<input checked="" type="checkbox"/>		
16.		<input checked="" type="checkbox"/> WO 9512900	05-11-95	WIPO English Abstract on Document	H01M-4-02	<input checked="" type="checkbox"/>		
17.		<input checked="" type="checkbox"/> DE 40 244 09 A1	02-06-92	Germany/English Abstract Provided	C01G-51/00			<input checked="" type="checkbox"/>
18.		<input checked="" type="checkbox"/> CA 2,200,998	09-25-98	Canada	H01M-4/24	<input checked="" type="checkbox"/>		
19.		<input checked="" type="checkbox"/> EP 1 049 182 A2	11-2-00	European Patent Office English Abstract	H01M-4/58			<input checked="" type="checkbox"/>
20.		<input checked="" type="checkbox"/> JP 52999101	11-12-93	Japan/English Abstract Provided	H01M-6/18			<input checked="" type="checkbox"/>
21.		<input checked="" type="checkbox"/> JP 11111295	04-23-99	European Patent Office English Abstract Provided	H01M-4/58			<input checked="" type="checkbox"/>

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)		
Ref. Desig.	Examiner's Initials	
1.		<input checked="" type="checkbox"/> Lutsko, V., Ion exchange and sorption processes as methods of synthesis of double phosphates and intercalated compounds, (1990), Phosphorus, Sulfur Silicon Relat. Elem., 51-52 (1-4), pp. 97-100, ABSTRACT PROVIDED.
2.		<input checked="" type="checkbox"/> Butt, G., et al., Lithium metal phosphate cathodes for Li Secondary batteries, (1998), J. Australas. Ceram. Soc., 34(1), pp. 60-65, ABSTRACT PROVIDED.

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FORM HDP-1449 (Based on Form PTO-1449)  PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE CITATION (Use several sheets if necessary) Sheet 3 of 4	ATTORNEY DOCKET NO.	SERIAL NO.
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3.		<input checked="" type="checkbox"/> Andersson, A., et al., Thermal stability of LiFePO ₄ – based cathodes, (2000), Electrochem. Solid-State Lett., 3(2), pp. 66-68, ABSTRACT PROVIDED.
4.		<input checked="" type="checkbox"/> Garcia-Alvarado, F., et al., Structural and electrochemical characterization of electrode materials for lithium rechargeable batteries, (2000) Bol. Soc. Esp. Ceram. Vidrio, 39(3), pp. 239-243, ABSTRACT PROVIDED.
5.		<input checked="" type="checkbox"/> Amine, K., et al., Olivine LiCoPO ₄ as 4.8 V electrode material for lithium batteries, (2000), Electrochem. Solid-State Lett. 3(4), pp. 178-179, ABSTRACT PROVIDED.
6.		<input checked="" type="checkbox"/> Best, A., et al., The effect of additives on ceramic materials for lithium solid electrolytes (1998), J. Australas. Ceram. Soc., 34(1), pp. 236-241.
7.		<input checked="" type="checkbox"/> Okada, S., et al., Cathodes properties of phospho-olivines for lithium secondary batteries, (2000), 14(2), pp. 133-137, ABSTRACT PROVIDED.
8.		<input checked="" type="checkbox"/> Amine, K., et al., Olivine LiMePO ₄ (Me: Co, Cu) as 4.8 V and 2 V positive electrode materials for lithium batteries, (2000), 14(2), pp. 133-137, ABSTRACT PROVIDED.
9.		<input checked="" type="checkbox"/> Padhi, A.K, et al., Phospho-Olivines as positive-electrode materials for rechargeable lithium batteries, (1997) J. Electrochem. Soc., 144(4), 1188-1194.
10.		<input checked="" type="checkbox"/> Padhi, A.K., et al., Effect of Structure on the Fe ³⁺ /Fe ²⁺ redox couple in Fe phosphates, (1997) J. Electrochem. Soc. 144(5), 1609-1613
11.		<input checked="" type="checkbox"/> Andersson, et al., Lithium extraction/insertion in LiFePO ₄ : an x-ray diffraction and Mossbauer spectroscopy study, (2000), Solid State Ionics, 130 (1,2), 41-52
12.		<input checked="" type="checkbox"/> Boutinaud, P., et al., The solid solution BaLi _{1-x} Cu _x PO ₄ (x<0.5): an example of Cu ⁺ single-ion luminescence in oxide insulators, (1996) J. Mater. Chem., 1996 6(3), 381-384
13.		<input checked="" type="checkbox"/> Vaknin, et al., Weakly (x=0) and randomly (x=0.033) coupled using antiferromagnetic planes in (Li _{1-3x} Fex) NiPO ₄ compounds, (1999) Phys. Rev. B: Condens. Matter. Mater. Phys. 60(2), 1100-1110
14.		<input checked="" type="checkbox"/> Goni, et al., ⁷ Li and ³¹ P nuclear magnetic resonance studies of Li _{1-3x} MgFexPO ₄ , (1998), Journal of Applied Physics, Vol. 84 No. 1
15.		<input checked="" type="checkbox"/> J.M. Cocciantelli, et al., On the irreversible transformation in Li/V ₂ O ₅ secondary batteries, Solid State Ionics, 78 (1995) 143-150

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OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)		
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16.		C. Delmas, et al., The $\text{Li}_x\text{V}_2\text{O}_5$ system: An overview of the structure modifications induced by the lithium intercalation, (1994) Solid State Ionics 69, 257-264
17.		Martinez-Juarez, et al., Relationship between Activation Energy and Bottleneck Size for Li^+ Ion Conduction in NASICON Materials of Composition $\text{LiMM}'(\text{PO}_4)_3$; $\text{M}, \text{M}' = \text{Ge}, \text{Ti}, \text{Sn}, \text{Hf}$, J. Phys. Chem, B 1998, 102, 372-375
18.		J. Gopalakrishnan, et al., $\text{V}_2(\text{PO}_4)_3$: A Novel NASICON Type Vanadium Phosphate Synthesized by Oxidative Deintercalation of Sodium from $\text{Na}_3\text{V}_2(\text{PO}_4)_3$, (1992) Chemistry of Materials, Volume 4, Number 4
19.		K.S. Nanjundaswamy, Synthesis, redox potential evaluation and electrochemical characteristics of NASICON – related-3D framework compounds, Solid State Ionics 92 (1996) 1-10
20.		International Search Report PCT/US 00/35302; PCT Search Authority

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